

Ozone Therapy for Spine Diseases: Review of Cases

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ABSTRACT

The objective of these clinical case studies is to demonstrate the therapeutic effectiveness of ozone therapy in cases of hernial discs and vertebral arthrosis in the lumbar sacral region.

A total of 4 patients were chosen: Two diagnosed with lumbar disc herniation; and two with discartrosis in the lumbar sacral region, at Ozonocenter Medical Center in Quito-Ecuador, in the second half of 2016.

Patients showed clear clinically signs of the disease: lumbar pain, gluteal pain, lumbar pain at walking and pain when sitting for too long. Nuclear magnetic resonance studies (MRI) of the lumbar sacral region were used to corroborate the presence, type and size of the illness before and after the treatment.

All four patients, showed size reduction of the protrusions discs and discartrosis improvement. A monthly follow-up with these patients was done during six months; they all remained asymptomatic during this period.

In conclusion, ozone therapy is an excellent medical procedure for the resolutions of disc protrusions and discartrosis at the lumbar sacral level.

Keywords: Disc herniation, Lumbar sacral region, Discartrosis, Ozone therapy, Protrusions, Nuclear magnetic resonance (MRI).

INTRODUCTION

Ozone in column discopatias accelerates the degradation of polyglucosides in the nucleus pulposus of the intervertebral disk which leads to its reabsorption, with the consequent reduction of the herniated material responsible for nerve compression. Ozone also eliminates the chemical mediators of inflammation (Fosfolipasa A2, Metalloproteinases, Prostaglandin E2, IL6, Glycoprotein YKL-40) that are released with the rupture of the nucleus pulposus of the injured disk and cause inflammation, muscle contracture, lack of irrigation (tissue hypoxia, ischemia, and acidosis), local edema, demyelination and nociceptive stimulus (pain). Ozone stimulates the action of the growth factor (TGF- β) favoring the regeneration of tissues. It increases the ability of the blood to absorb and transport oxygen (hyperoxygenation) improving micro circulation and cellular functions, decreasing edema, regulating the cellular Redox balance and neutralizing the free radicals of oxygen [1-5].

MATERIALS AND METHODS

This study was reviewed and approved by the Ozone Center Ethics Committee; it complied with the Helsinki Declaration requirements, latest version - General Assembly of Edinburgh, Scotland, October 2000 [6].

The following technique was used with all patients: After disinfecting the area, we did an infiltration of the compartment of the psoas or Boniotot space, with 15 cc of ozone at a concentration of 20 ug/cc, 4 cm from the spinous process at intercrest as iliac or Tuffier line level which corresponds to L4, following the technique of Capdevilla or modified Nizora, defining the infiltration side based on the location of the lumbar problem or paresthesia in the lower limb in case of Radiculopathy. Very thin needles were used, No. 22 x 7 cm [7].

On the contralateral side, we did an infiltration of 10 cc of ozone at a concentration of 20 ug/cc, in the paravertebral musculature, 2 cm from the spinous process, at various

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locations depending on the position of the root disk conflict. Needles No. 23 x 3.8 cm were used.

The longer needles and therefore deeper infiltrations are aimed at reaching the emergency of the radicular nerve root and the site of infiltration (right or left) depends on the place where is located the conflict root disk (pain, paresthesias in the buttock, leg, foot) corresponding.

Studies of magnetic resonance imaging (MRI) of the lumbo sacral region were used to corroborate the evolution of the injuries at the end of the treatment. The characteristics of the



Figure 1. Pre-treatment MRI Case 1

Case 2: Male, 25 years old, student, presents intense back pain with radiation to left lower limb, associated with paresthesia's that went through his toes. When doing physical examination, patient presented low back pain, left positive Lasègue, decreased patellar reflex, positive Semmes Weinstein test (monofilament) on left foot. After the fourth



Figure 3. Pre-treatment MRI Case 2

Case 3: Female, 49 years old, housewife, history of low back pain for several years, diagnosed with herniated disc. Presents intense lumbar pain that increases when getting out of bed, standing or sitting for a long time. Lumbar flexion accentuates the pain. After physical examination, painful facies is evident, there is pain pressure in the lumbar region and right Lasègue. Monofilament test is negative on both

pain and further details of the examination, was not evaluated for not being a reason for the study.

Case 1: Female, 42 years, medical doctor, presents pain in lumbar area that increases when standing for too long, pain becomes disabling at night. When applying the digit lumbar intervertebral pressure (Delitala sign), patient presents pain in the sacroiliac joints. No signs of root compression. Since the second Ozonotherapy session, the symptomatology was gradually diminishing, until it disappeared completely. Post-treatment MRI showed a complete reduction of the discal protrusions at L4/L5 and L5/S1. (Figure 1, 2)



Figure 2. Post-treatment MRI Case 1

Ozone therapy session, pain started to decrease until it disappeared as verified in the subsequent tests. Also since the sixth session, patient showed recovery of touch sensation in his left foot, improving ambulation. The MRI done at the end of the therapy evidenced a significant reduction of Herniated discs L4/L5 and L5/S1. (Figures 3,4)



Figure 4. Post-treatment MRI Case 2

feet. Patient started showing gradual pain relief, until she became asymptomatic in the subsequent tests. Post-treatment MRI showed a significant improvement on her discarthrosis, even with vertebral disc L4/L5 regeneration and resolution of the L5/S1 disc protrusion and Schmorl nodes. (Figures 5,6)

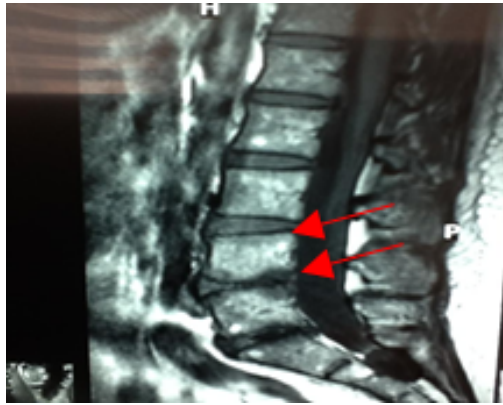


Figure 5. Pre-treatment MRI Case 3



Figure 6. Post-treatment MRI Case 3

Case 4: Male, 60 years old, lawyer, presents important back pain especially when practicing sports which radiates to left lower limb which limits his daily activities. Physical examination shows intervertebral lumbar pain and left Lasègue. Monofilament test is negative on both feet. By the

end of the therapy, MRI shows an absolute improvement on the discarthrosis phenomenon, patient remains asymptomatic and returns to his day-to-day work (Figures 7,8)



Figure 7. Pre-treatment Case 4

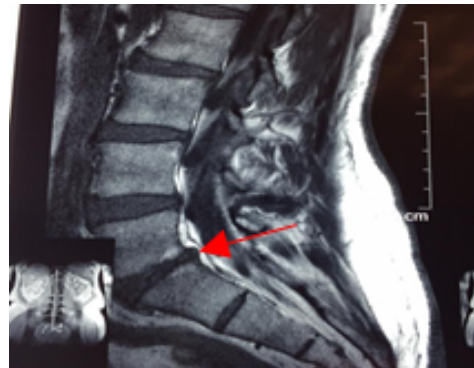


Figure 8. Post-treatment Case 4

DISCUSSION

In the past couple of years, Ozone therapy has developed as an effective therapeutic method, being recognized and used in various countries around the world. There are currently more than 40 national and international associations that bring together professionals who practice this therapy. One of the most recent achievements was to unify criteria in terms of methods and procedures to follow in the "Madrid's Declaration of Ozonotherapy", signed in Madrid, Spain (June 2015) during the international meeting of Ozone therapy schools. It is currently the only existing global document on ozone and its recommendations are implemented around the world [8].

Ozone treatments are considered modern therapies of great utility in multiple pathologies; they have great results in herniated discs at the lumbar area. This technique is based on the infiltration of ozone in the paravertebral muscles adjacent to the injury and/or the emergence of the nerve roots that form the spinal/sciatic nerve. Psoas or Bonitot space chamber infiltrations along with Capdevilla or

modified Nizora technique, help block and reduce the pain, symptoms and size of the herniated material by ceasing the compressive effect [9-11].

A recent meta-analysis showed that ozone therapy is as effective as surgery, with much less adverse events and also less expensive. It is currently one of the best options to treat Herniated disc pain, with the advantage of being an outpatient treatment. The benefits are long-lasting and there aren't adverse results if the technique is well used [12].

There are discolysis techniques with ozone, which must be carried out in an operating room with the support of sedation and fluoroscopy equipment to guide needles puncture. These techniques are more expensive and their benefits do not exceed the ones of paravertebral ozone infiltration [13-16].

On a Meta-analysis done by Steppan J. on 2010, he studied the use of ozone in Herniated discs cases and concluded that the technique of intradiscal ozone therapy or intraforaminal

has an II-3 level of evidence; while the technique of paravertebral ozone has an II-1 level of evidence [17].

The analysis carried out at Ozone Medical Center confirms the results observed by other authors, ozone reduces the size of the discal protrusions and discarthrotic vertebral lesions, as well as the symptomatology. In conclusion, the paravertebral ozonotherapy, constitutes an excellent medical procedure for Herniated discs and spinal discarthrotic; providing patients a better quality of life. Further studies on this matter are needed to establish treatment protocols.

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